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COS20007 Object Oriented Programming -Semester Test Q2

Abstraction Explanation

Abstraction is the term to present the necessary information to the users, but not actually show how the information is implemented.

For example, user need to know that a washing machine can wash their cloth, but they do not need to know exactly the behind process of how it works.
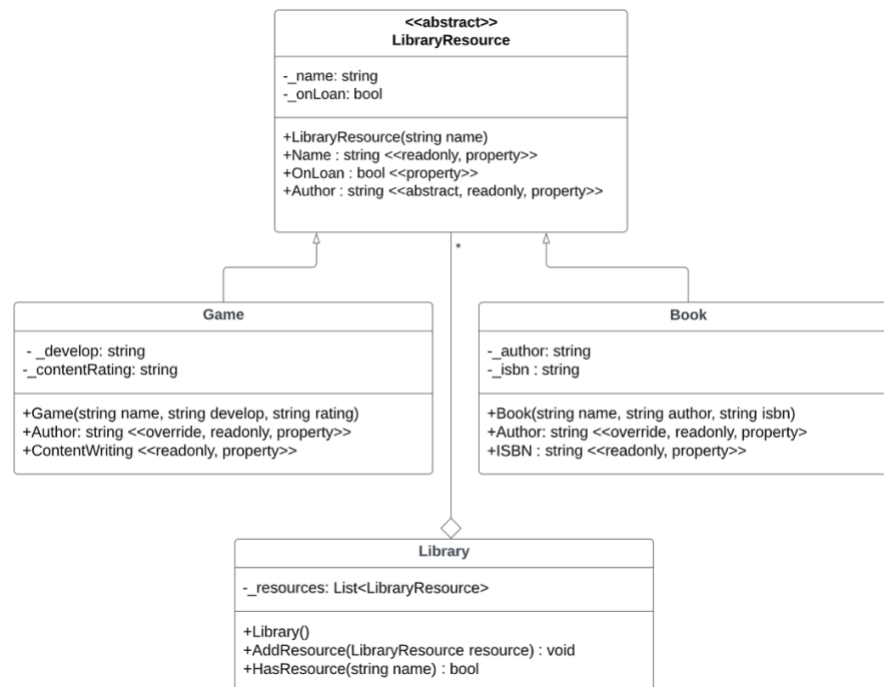

Figure 1. Solution for question 1

As Figure 1 above, when the user looks at the library class, they just need to know that the library can add a resource, but the resource could be a Game or Book, but in common, they are implemented in the same behaviors. Game or Book will be stored in the library after the method AddResource called, because they have the characteristic of a LibraryResource.

Polymorphism explanation

Many derived classes from one given abstract class, can have their owns way to perform a method. From a single function from the abstract class, it can be performed differently depending on the child class.
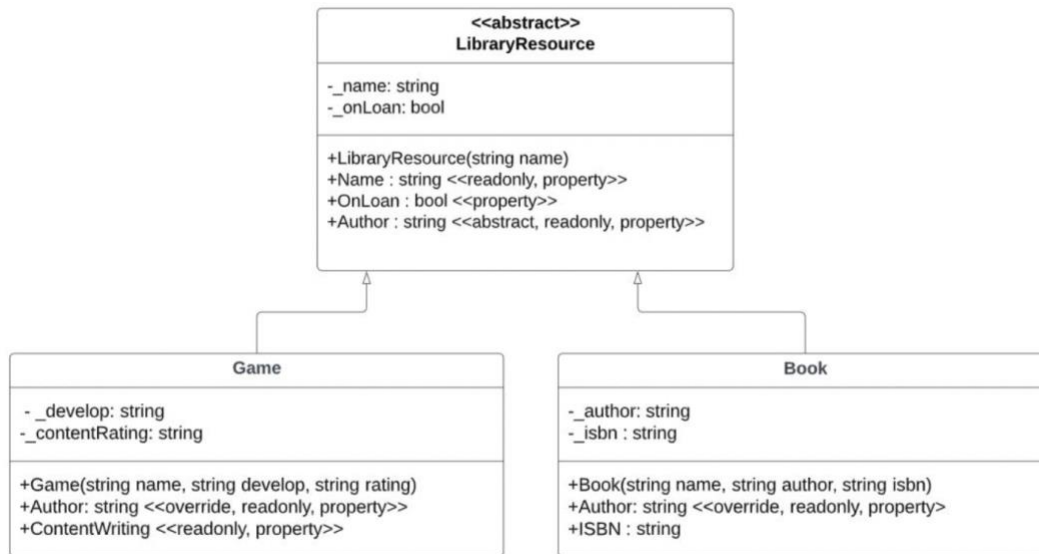

Figure 2. UML Diagram to demonstrate use of polymorphism from question 1

As the Figure 2 above, two derived classes: *Game* and *Book*, they have the same method *Author,* but the *Game* class will return the developer of the game, the *Book* class will return the author of the book. The source code below will provide more detail.

```
public override string Author
{
    get
    {
        return _develop;
    }
}
```

Figure 3. Author method of the Game class

```
public override string Author
{
    get
    {
        return _author;
    }
}
```

Figure 4. Author method of the Book class